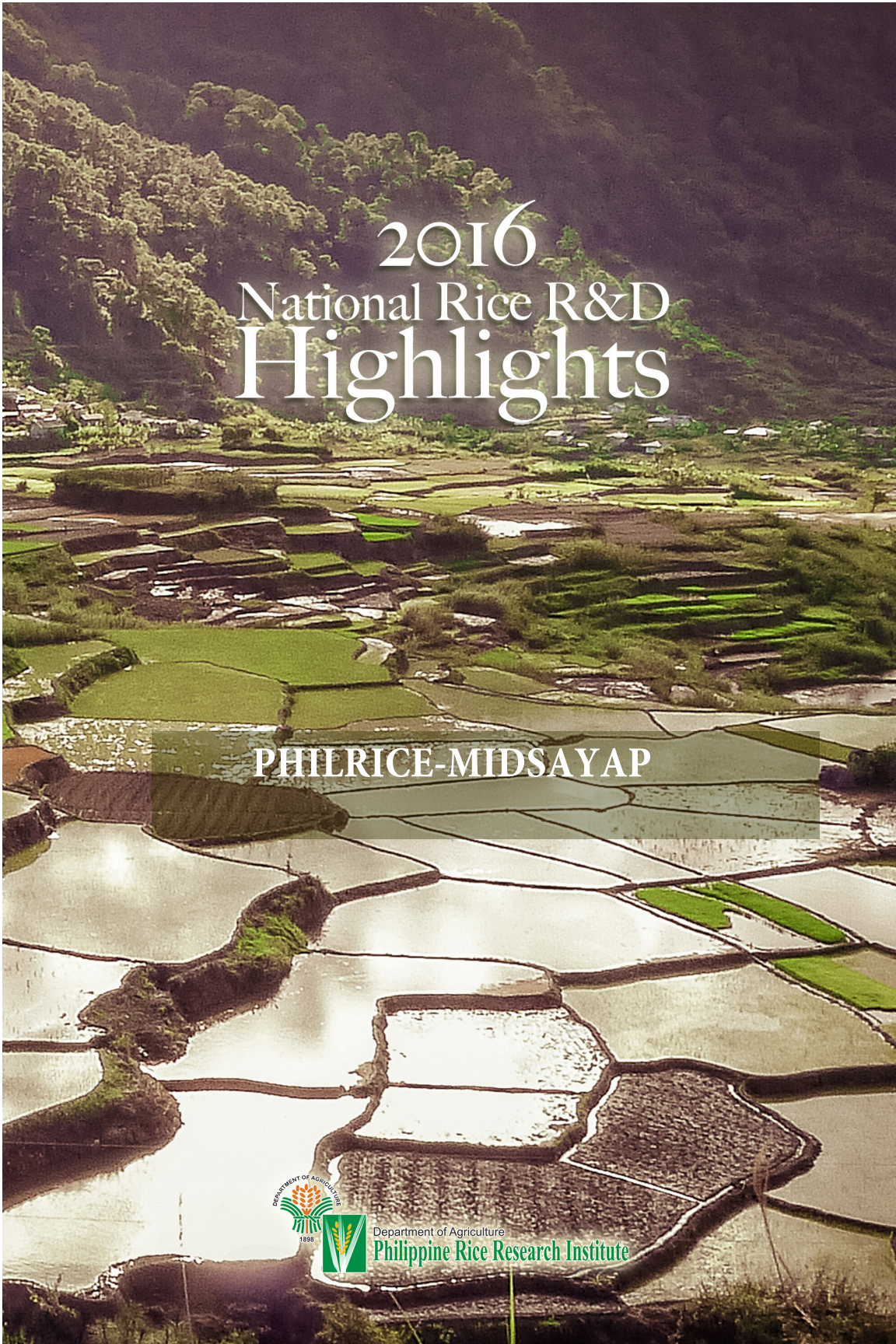

2016 National Rice R&D Highlights

PHILRICE-MIDSAYAP

Department of Agriculture
Philippine Rice Research Institute

TABLE OF CONTENTS

PhilRice Midsayap

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Executive Summary

The Development Unit of PhilRice Midsayap implemented both core and externally funded projects and studies that contributed to the development of location specific technologies of rice and rice-based farming systems; and improving farmers' farming practices to help increase farmers' productivity and income through intensive package of technology demonstration, promotion and capacity building of the rice stakeholders such as agricultural extension workers (AEWs), Farmers, Professionals, Students and other individual.

As one of the lead agencies in providing technical assistance and developing extension modalities, PhilRice Midsayap carry out its Development initiatives in partnership with Agricultural Training Institute R12, National Irrigation Administration through its National Irrigation Systems, State Colleges and Universities, Local Government Units (LGUs) and other public and private partners to accelerate technology adoption and adaptation in its area of coverage that include Region IX, XI (Davao del Sur Only), XII and the Autonomous Region in Muslim Mindanao (ARMM), For 2016, two (2) core funded development projects and 4 studies implemented as follows; (1) Learning Center (Component 1: Learning Farm; 2: Palayabangan: 10-5 Challenge & 3: Training of New Agriculture Graduates; (2) Integrated Rice-Based Agribio-System (IRBAS); (3) One-Stop Information Shop (OSIS): PhilRice Midsayap Farmers' Agricultural Information and Technology Hub; (4) PhilRice Midsayap- Best Station, (5) Be Riceponsible campaign and (6) Palayamanayon: the Rural Transformation Movement.

In addition, 7 externally funded projects both national and internationally funded were implemented; (1) JICA-TCP5: Rice-Based Farming Technology Extension Project for the Autonomous Region in Muslim Mindanao [(ARMM) (2012 to 2017)]; (2) National Irrigation Sector Rehabilitation & Improvement Project Agricultural Support Component [(NISRIP-ASC) (2012 to 2017)]; (3) Upland Rice Development Program in Region IX, XII & ARMM (2012 to 2015); (4) Philippine Rice Information System; (5) Raising Productivity and Enriching the Legacy of Heirloom/ Traditional Rice through Empowering Communities in Unfavorable Rice-Based Ecosystem (Heirloom Rice Project); (6) FSSP: Accelerating the Dissemination of Associated Technologies for Increasing Yield and

Profitability in Irrigated (NIS, CIP, SWIP) Environment and (7) Knowledge Sharing and Learning (KSL) activity.

Each project/study accomplishments were further discussed in details within the given period of activity implementation.

A. Core Funded Projects/Studies

I. Learning Center (MNC-002-000)

OHAbdulkadil, STCQuiring, SABalidiong, RPJayme, and RSSalazar

On-farm learning center, primarily used to demonstrate integrated and diversified rice-based production systems, that will provide experiential learning opportunities to learners or trainees (i.e. farmers, student-trainees, others) to various on-farm options or components. The project aims to achieve a holistic and comprehensive technology packages and developing alternative inputs to come up with sustainable and cost-effective rice and rice-based farming systems while preserving our natural resources.

PhilRice Midsayap in 2016 dry and wet season learning field was established and maintained relay rice planting to showcase the major growth stages of the rice plant intended for training and re-evaluation and yield performance of variety used at different planting date, maintained practicum area for demonstration of the cost reducing technologies (MOET, LCC, Drum seeder and Controlled Irrigation), use of farm machinery and crop establishment.

Activities:

Component 1: Establishment of Learning Farm (Relay Planting)

Results:

- Established and maintained rice relay planting which showcased different crop stages; seedling, tillering, flowering, and maturity (80 to 85%) planted with the following rice varieties: NSIC Rc238, and NSIC Rc360 in a monthly basis which served as learning field during agroecosystem analysis (AESA), and LCC reading of the training participants.

- The learning farm served as a practicum area for 30 participants from the Palay Initiative (NGO) 10 on-the-job training (OJT) students, 54 for Rice Boot Camp participants, In addition, the learning field served as the technology demonstration area for the setting up of Minus One Element Technique (MOET), demonstration of Plastic Drumseeder for crop establishment and alternate wetting and drying or Control Irrigation as a water saving technology.

Component 2: Palayabangan: The 10- 5 CHALLENGE

The 10-5 challenge aims to raise the rice production standard to 10t/ha yield at PhP5.00 input cost for every kilogram of palay produced. Current average yield is about 4t/ha while input cost is about PhP11/kg of palay. This new initiative also aims to provide opportunities for all players in the rice sector to show what they can do to improve yield and reduce production cost.

The 10-5 Challenge supports the goal of the Food Staples Sufficiency Program of the country and the advocacies of the National Year of Rice to help farmer's productivity, make them globally competitive, and boost their morale.

Midsayap 10 -5 challenge in dry season 2016, were participated by two noncompeting teams and two competing team: a) research; b) development; c) business development d) bayer, and e) sygenta. Business development obtained 4.8t/ha with an input cost of 5.53/kg of palay. Wet season 2016, six group participated: Syngenta ,bayer, texicon ,research , business development , and development. Research obtained higher yield despite of high infestation of rice black bug.

Results:

- In 2016 dry and wet seasons, there were five participating groups joined in the Palayabangan 10:5 Challenge. Two of them were competing teams, the Bayer Philippines and Syngenta while the three of them were non-competing, the delivery units of the station such as Research, Development and Business Development (BDD) (Table 1).

- Based on the yield obtained, BDD group has the highest yield of 4.8t/ha while Syngenta obtained an average yield of 0.8t/ha which is the lowest among the participating teams.

- Moreover, for the input cost per kilogram of paddy rice, BDD obtained the lowest cost of PhP5.53/kg while the Syngenta got the highest cost input of PhP49.06/kg of paddy rice for the dry season.

- During the wet season 2016, five participating groups were

maintained except for the competing team Syngenta did not joined the contest but it was replaced by the Texicon (Table 2).

- For wet season 2016, the Development unit got the highest average yield of 5.1t/ha while the BDD and Texicon obtained an average of 1.8t/ha, respectively (Table 2).

- However, for the input cost per kilogram of paddy rice, Research PhP3.1 while the highest input cost obtained by Texicon.

Table 1. Palayabangan: 10-5 Challenge (2016 DS).

Participants	Yield t/ha @14% MC	Input cost per kilogram	Variety Planted
Bayer	4.0	P8.09	Bigante Plus
Syngenta	0.8	P49.06	NSIC Rc234H
Development	4.2	P5.61	NSIC Rc238
Business Development	4.8	P5.53	NSIC Rc222
Research	4.3	P5.61	NSIC Rc222

Table 2. Palayabangan: 10-5 Challenge (2016 WS).

Participants	**Yield t/ha @14% MC**	**Input cost per kilogram**	**Variety Planted**
Bayer	1.9	9.9	Hybrid Bigante Plus
Texicon	1.8	11.8	NSIC Rc222
Development	5.1	4.3	NSIC Rc308
Business Development	1.8	8.3	NSIC Rc352
Research	4.7	3.1	NSIC Rc222

Component 3: Trainings for PhilRice Midsayap staff and new agriculture graduates (Rice Boot Camp) and farmers

The Philippine Rice Research Institute (PhilRice) is one of the country's renowned research and development (R&D) institution. It remains as the model institution and "haven" for farmers, extension workers, students, and local government officials especially in terms of rice R&D and trainings on rice and rice-based productions.To uphold this identity and honor of serving the Institutes' clients, PhilRice tries to maintain highly competent staff members and update their skills and knowledge through training and education, specifically on the recent updates on rice and rice-based production technologies developed by PhilRice.

For 2016, the proponents of the study conducted two batches of the Training for New Agriculture Graduates with a total of 54 agriculture and related courses graduates. The training aimed to enhance the knowledge and skills of newly graduated students on the latest rice and rice-based production technologies and to make them exceptional in applying for a research and development job after satisfacory competing the training.

Results:

- Fifty four (54) new agriculture graduates from State Universities and Colleges (SUCs) were trained on PalayCheck System and Palayamanan Plus (Figure 1). The participants were composed of the fallowing major fields: Plant Breeding and Genetics; Agricultural Extension and Communication; Agricultural Education; Agricultural Technology; Sustainable Agriculture; Agronomy; Agricultural Business Management; Farming Systems; Animal Science, Horticulture, Plant Breeding and Genetics, Soil Science and Agricultural Engineering from University of Southern Mindanao (USM), Central Mindanao University (CMU), Sultan Kudarat State University (SKSU), UPI Agricultural School, Mindanao State University (MSU) Dinaig, General Santos City Campus), SPAMAST Davao del Sur and Western Mindanao State University (WMSU).

- Of the 5 participants, 27 were male and 28 were female.

- Participants' overall rating of the course is excellent. The participants identified the resource persons, facilitators and course content as the strenghts of the training.

- Moreover, the appreciation training course for PhilRice staff wasalso done and participated by 36 technical and non-technical staff of the station (Figure 2). Twenty six (26) were Research and Development staffer, nine (9) were Admin staffer and one (1) was Business Development staffer. Twenty one (21) of theme were male and 15 were female. Most of the participants aged between 21 to 25 years old.

- The participants' knowledge gain increased by 64%. The results of the pre and post test showed that the training enhanced the awareness and understanding of the participants on rice farming.

- Further, the overall rating of the course was excellent.

- In addition, a total of 40 participants were benefitted in Organic Agriculture training for religious leaders and farmers of Bugawas in Datu Odin Sinsuat, Maguindanao. Thirty four (34) of them were male; 6 were female. Majority of the participants ranged twety to thirty (20 to 30) years old while some are 61to 70 years old.

- Moreover, there were 17 on the job training graduated on Rice Production Technology through Palay Check System and Palayamanan Plus training course from Cotabato City State Polytechnic College.

Figure 1. New agriculture graduates trained on PalayChech System and Palayamanan Plus training course (Rice Booth Camp).

Figure 2. PhilRice Midsayap staffer graduates on PalayChech System and Palayamanan Plus training course.

Component 4: Technology Exhibits

To accelerate technology promotion and showcased rice and rice-based technologies, technology exhibits was done in all agri-trade fairs, for a in any other form of agri events.

Results:

- There were 4 technology exhibits conducted in various agri events in the Agri-Trade Fair during the Kalivungan Festival of North Cotabato; Agri Trade Expo at SMX Convention Center, Davao City; Agri-Trade Fair of Midsayap during Patronal Fiesta and during 80th Founding Anniversary of Midsayap.

II. One-Stop Information Shop (OSIS): A Farmers' Agricultural Information and Technology Hub (FAITH)

OHAbdulkadil, STC Quiring, and RSSalazar

The One-Stop-Information-Shop (OSIS) of PhilRice Midsayap has created to provide access to the information needs of farmers, agricultural technologists (ATs), professionals and other rice stakeholders visiting the station. However, the need to supply information on rice science and technology should be propagated beyond the confines of the station. Thus, the proponents of this study thought of bringing the OSIS to places that are more accessible to other rice stakeholders in the community.

The academe is one of the most active facets of the society. Aside from this trait, the academe encompasses a wide range of the people through its educational nature. Students and teachers alike are always seeking for new knowledge. Specifically, those who are incline to agriculture should be made aware of the current trends and innovation in the rice world. Thus, this project/study was conducted to enhance information dissemination of rice science and technology. Specifically, it seeks to accomplish the following: (a) establish PhilRice Corners in five (5) State Universities and Colleges (SUCs) in the station's area of responsibility (AOR) to speed up the proliferation of information on rice science; (b) launch the PhilRice Corners, maintain and update the content of the established PhilRice Corners.

Results:

- Five agricultural schools were selected to be the partner schools of PhilRice Corners being established by the station. These are the Southern Christian College (SCC) in Midsayap, North Cotabato; Mindanao State University-Dinaig Campus (MSU-Dinaig) in Datu Odin Sinsuat, Maguindanao; Cotabato City State Polytechnic College (CCSPC) in Cotabato City; Upi Agricultural School (UAS) in Upi, Maguindanao; and Sultan Kudarat State University (SKSU)-Lutayan Campus in Lutayan, Sultan Kudarat (Figure 3).

- Established PhilRice Corners in the SUCs libraries were provided with 164 books, 181 magazines and 218 rice technology bulletins as the PhilRice Corner contents to be utilized by the students as one of the references/information, education and communication materials (IEC) on their search for new development in agriculture and latest rice information and technologies.

- In addition, two (2) bookshelves, a lectern, books and leaflet holders were fabricated and provided for each SUC recipient.

- Presently, OSIS at the station continues to provide information to farmers and other stakeholders who visited whether to buy seeds or do research in the rice industry related topics.

- The OSIS contents is being updated and maintained with new issues of PhilRice Magazine, bulletins and other techno guide. A total of 226 rice stakeholders visited the OSIS to seek information on different rice production management, and some students did research for their school reports and thesis manuscript writing.

- In addition, as part of information and technology promotion activities, the station conducted the "3rd Annual Mangunguma, Kamusta Ka" a development initiative in reaching more rice communities to provide information and latest technology development in the rice industry. The said activity was done in Barangay Lagumbingan and participated by 200 rice farmers from different Irrigator's Associations of Barangay Bagumba (41); Lagumbingan (134); Palongoguen (11); San Isidro (11) and Katingawan (3).

- The "Mangunguma, Kamusta Ka" activity focused on providing information to help farmers increase yield through technical briefing or "Talakayan" strategy. Distribution of 2kg starter seed kit and observation well for water management was also done.

Figure 3. Established PhilRice Corner at Cotabato City State Polytechnic College (CCSPC), Cotabato City.

III. Lakbay Palay

OHAbdulkadil and SEAbdula

The recent Lakbay Palay or Farmers' Field Day and Forum conducted at PhilRice Midsayap was indeed the grandest and most prestigious field day in the history of the station. A total of 1,352 rice stakeholders from DA line agencies, LGUs of North Cotabato, seed growers, Irrigator Associations (IAs) of Midsayap who joined Engr. Ariel T. Cayanan, Undersecretary for Operations of the Department of Agriculture and the Executive Director of the Philippine Rural Development Project was the Guest of Honor and Speaker of the 2016 Annual Farmers' Field Day and Forum (Figure 4).

This year's Farmer's Field Day and Forum theme "Reporma sa Industriyang Pagpapalay para sa pag-angat ng Ekonomiya (RIPE)" (Figure 5) was derived and coined from the proposed "RIPE" banner program of the DA Secretary Emmanuel F. Pinol for affordable and available food for the Filipino people. The activity was highlighted by showcasing the PhilRice developed rice production technologies such as high yielding varieties in the Breeder/Foundation/Registered Seed Production area, Participatory Varietal Selection (PVS) demo farm, Palayamanan Plus, IRBAS project (rice-based intensification, vermicomposting, mushroom production), and postharvest facilities such Reversible Flatbed Dryer, Seed Cleaner, Combine harvester and other matured technologies for rice farming.

Results:

- This year's Farmers' Field Day was attended by 1,352 rice stakeholders from DA line agencies, LGUs of North Cotabato, seed growers, Irrigator Associations (IAs) of Midsayap which exceeded the target 1,000 participants.

- Field Day assessment result revealed that 37% of the respondents expressed that the activity met their expectations; 24% viewed the activity has exceeded their expectations, and 19% were extremely satisfied with the farmers' field day and forum, while 10% reported that they did not meet their expectations.

- Project launching was also done for TCP 6 Project titled Upland Rice-Based Farming Technology Transfer Program for the Bangsamoro (Fig.6) to improve the living standards of farmers among selected sites in Maguindanao and Lanao del Sur by adopting rice farm technologies in upland areas and PalaYamaNayon Project with the Agriculture Farmers' Credit Cooperative (AFCC) for their calamansi juice.

Figure 4. (L-R): PhilRice Acting Executive Director, Dr. SEAbdula; PhilRice Agusan Acting Branch Director, Mr. AT Montecalvo; PhilRice Midsayap Acting Branch Director, Mr. OHAbdulkadil; PhilRice Deputy Executive Director for Research, Dr. EJPQuilang; DA-USec for Operation, Engr. ATCayanan and Midsayap Vice-Mayor, Hon. LAGarduque.

Figure 5. 2016 Lakbay Palay/ Farmers' Field Day Official theme and seal.

Figure 6. (L-R): JICA Representative, Mr. Dimezu; PhilRice Midsayap Acting Branch Director, Mr. Ommal H. Abdulkadil and PhilRice Executive Director, Dr. Sailila E. Abdula.

Activities:

Several PhilRice Midsayap staff who is specialists in certain fields was either dispatched as lecturers during the trainings, technical briefing and other related R&D activities within the area of coverage of the branch station.

Results:

- In January to November 2016, a total of 369 rice stakeholders from Region 9, 12 and ARMM were provided and supported with technical assistance (Table 3).

Table 3. Technical assistance provided, 2016.

TOPICS	DATE	# ATTENDEES
Controlled Irrigation (CI) or Water Savings Technology (WST) Production	March 11-17, 2016	**150** Irrigators association (IA) officers
Basic Training Course on Seed Production	April 26, 2016	**19** Seed Growers of Region XII
Training course on PalayCheck System with Emphasis on Water Saving Technology for rice Farmers of	April 26, 2016	**26** Rice farmers
Business Model Technical Review for the 2016 proposed enterprises for North Cotabato	June 17, 2016	**14** Rice farmers technical staff
Newly released rice varieties	June 28, 2016	**32** Rice farmers and seed growers
PalayCheck System for BMLI and BDA technical staff	July 19, 2016	**25** Technical staff
PalayCheck System : Ang El Nino at Pagpapalayan"	September 28, 2016	**29** Rice farmers and seed growers
PalayCheck System : Ang El Nino at Pagpapalayan"	October 5, 2016	**23** Rice farmers and seed growers
PalayCheck System : Ang El Nino at Pagpapalayan"	October 26, 2016	**19** Rice farmers and seed growers
Basic Training Course on Seed Production	November 14-17	**32** Rice farmers and seed growers
	TOTAL	**369**

IV. Integrated Rice-Based Agri-Bio System (IRBAS): Palayamananan Plus (MNC 006-000)

PLPSabes, SE Abdula, OHAbdulkadil, LMADomo, ILBauzon, and IVBoholano

PhilRice Midsayap established and promoted the Palayamanan Plus – the system core values are crop integration, intensification and diversification. The system developed agri-bio enterprises that maximizes the utilization of farm waste, aiming to increase productivity and income of a small scale farming households, through integration and diversification of high valued farming components.

Activities:

The IRBAS project being implemented by the station focused on the model development through the establishment of the following components: (1) small scale mushroom production - focusing on growing oyster mushroom (Pleurotus spp.); (2) organic fertilizer production – uses readily available substrate in the locality and (3) production of high quality rice seeds - which produces location specific high quality seeds that are high market value and pest resistance.

Small scale mushroom production enterprise

PLPSabes and LMADomo

Mushroom production in North Cotabato is an unpopular business enterprise, yet the industry and demand are high. Cultivation is a waste recycling activity; agricultural waste processed into substrates and converted these materials as a natural host of a fungi. Mushroom production is opportunity as additional enterprise for an ordinary farmers or small scale farming households without much land; the materials are continuously available in the locality and it doesn't need a larger surface area to obtained high profit. However growing a mushroom is a complex and has a distinct technique.

Results:

- In dry season, 36.6kg of paddy mushroom were harvested from 22 linear meters set up, with PhP3,660.00 gross income.
- Despite of dry spell in the locality, the station produced two hundred sixty-two (262) fruiting bags of oyster mushroom with 1% contaminants. Meanwhile, in wet season, a total of 73.59kg was produced from July to October; 50.53kg from oyster mushroom and 23.36kg paddy mushroom.
- A total of 1,344 of inoculated fruiting bags were produced from the 1st cycle of production to October set up. Some of these fruiting bags were given to participants as starter kit during trainings. The enterprise now has four species of mushroom namely: Pleurotus florida, Pleurotus sajor, Auricularia sp. (pink), and Volvariella volvacea (Figure7).

Figure 7. Mushroom production enterprise: (a) inoculated fruiting bags; (b) set up of paddy mushroom; (c) white buttons of V. volvacea; (d) Auricularia sp.; (e) Pleurotus sajor ; (f) Pleurotus florida.

High quality rice seeds production enterprise

PLPSabes, LMADomo, IVBoholano, and IMLBauzon

The cultivation of rice remains the platform on which rural livelihoods in the lowlands are based. Over the past decade, the adoption of new technologies has resulted in productivity improvements in lowland rice systems, yet small scale farmers' further gain is being sought to maintain rice self-sufficiency but still sustainability is still a big question mark in terms of rice production.

Results:

- In 2016 dry season (DS) a total of 4.01 ha was utilized for the rice-based intensification enterprise with NSIC Rc128 (1.41ha.) and Rc222 (2.60ha.) varieties planted. An average

yield of 5.07t/ha (20, 327.25kg of rice seeds) was attained and earned a gross income of Php539, 465.00 (sale from RS=Php 403, 325.00 and Php 136, 140.00 from commercial palay).

- However, in wet season (WS) production, an average yield of 4.02t/ha was obtained. Only 12, 778kg of rice seeds were harvested from 3.18ha production area.

- It was also noted that most of the rice seed produced were downgraded into commercial due to 95% of the rice crop were damaged due to lodging 2 weeks before the scheduled harvest. Nevertheless, the enterprise attained a gross income of PhP829,033.00.

Organic fertilizer production enterprise
PLPSabes, LMADomo, IVBoholano, and IMLBauzon

Organic farming is practiced by farmers nowadays because it is considered as healthiest way of growing food crops. It is an emerging farming system that most of the farmers observed not only in the Philippines but as well as in other countries. Vermicompost is one of the organic fertilizers that revives the soil fertility level and revitalize the soil environment. In addition, it is environment-friendly since earthworms feed on anything that is biodegradable and it aids in the wastes disposal problem in our country.

Results:

- A total of 2,200kg of vermincompost was produced in dry season and was utilized as organic fertilizer in vegetables production.

- During the wet season, a total of 4,250kg of vermicompost was harvested.

- Moreover, indigenous microorganism (IMO) was also produced and used as amendments/treatments to hasten the decomposition of organic matter.

- The enterprise attained a gross income of PhP29, 440.00 in January to November 2016 production cycle, being purchased and utilized under the JICA project.

Vegetables and Aqua culture production
PLPSabes and LMADomo

Growing vegetables after rice crop establishment is a practice by several farmers for their own consumption or to trade locally. Farmers often or almost of the rice farmers depend solely on rice cultivation or practice monocropping. However, due to increasing high cost of labor and inputs in rice cultivation and narrower margins of profitability, vegetables and aquaculture production was introduced as profitable enterprise.

Results:

- Vegetables grown as catch crop: bitter gourd (ampalaya), eggplant (talong), cucumber (pipino), string beans (sitaw), squash (kalabasa), lady's finger (okra), raddish (labanos), and pechay are among the vegetables that has been planted.

- These vegetables were planted in the paddy bund, along fences and irrigation canal. Planting started on August to October 2016, and gave a gross income of PhP9,210.00.

- Old Irrigation reservoir located within project site was used for fish culture. The pond contains 500 fingerlings of tilapia. The fingerlings were under careful management and expected to be harvested on March 2017.

PalaYamaNayon (Rural Transformation Movement)
OHAbdulkadil, STCQuiring, and MMMedura

Philippine Rice Research Institute come up with a program Rural Transformation Movement or known as PalaYamaNayon to improve the living standards of the rice farmers by introducing various technologies and farming technique and transforming them to become agripreneurs. The movement was designed to be holistic since it encompasses mental reform, income boost and social capital. Farmers were inculcated with the value of smart investment and strategic rice farming and were encourage exploring more options for livelihood from rice and rice-based products.

PhilRice Midsayap implemented PalaYamaNayon and chosen Agriculture Farmer's Credit Cooperative (AFCC) as a community pilot test area that would embody the ideas of the project. AFCC was chosen since (1) the locale of the AFCC is within the station's AOR; (2) it is composed of rice farmers; and (3) they were willing to partner with the station on the

undertaking of the project.

To uplift the productivity and profitability of the farmer members of the Agriculture Farmer's Credit Cooperative (AFCC) in Barangay Agriculture, Midsayap, Cotabato by establishing them as a Rice Seed Grower in the locality. Specifically, the project seeks to: (1) transform farmers from mere crop producers to agripreneurs (Mental Reforms); (2) shift from production to enterprise-driven agricultural operation in the community (Income Boost); and (3) organize the local farmers into a business entity using the cooperative paradigm (Social Capital). Series of stakeholders meeting was done with other possible partners in the implementation of the project (Figure 8a).

Results:

Rice Seed Production Enterprise

- A rice seed production enterprise was established in which PhilRice provided 6 bags of Foundation seeds and 65 bags of Registered seeds of different varieties to the cooperative and was planted in 20ha production area.

- A total of 300 bags were harvested (postharvest operation is on-going). However, 3ha were damaged due to severe disease infection and pest infestation

Calamansi Juice Production Enterprise

- AFCC was able to engage in a Calamansi juice production that was produce from their kalamansi plant being launched during the 2016 Farmers' Field Day and Forum on September 20, 2016 (Figure 8b).

- There were 1,500 bottles of calamansi juice sold which gave them a PhP22,500 additional income

Figure 8a. Stakeholder's meeting with project partners from DOST, DTI, NSQCS 12 and other stakeholders held on July 7, 2016.

Figure 8b. Product launching of Kalamansi juice on September 20, 2016 at PhilRice Midsayap.

V. PhilRice Midsayap's Be Riceponsible Campaign

OHAbdulkadil, STCQuiring, and MMMedura

Rice is the most important staple food and an essential part of the Filipino culture. Philippine rice production could not support the demand thus resulting to importation of great quantity of rice, whereas this country ranked third in the world (Aguilar 2005). But despite the scenario, about 2 tbsp. of cooked or 9 grams of uncooked rice were wasted daily. Data from 2008 shows that rice being wasted equivalents to 12.2% of the total rice import amounting to PhP7.27 billion or the consumption of nearly 2.5M Filipinos in a year(PhilRice Infographic 2016) . In 2013 the National Year of the Rice was declared by the President and the Be Riceponsable Campaign takes off.

Be Riceponsable is an advocacy campaigns that aims to promote the Riceponsibility of every Filipinos to their respective institution and to the country. Through these campaign farmers, policy-makers and the public were encouraged to be Riceponsable in their own way. This is for them to improve themselves or their families' health while aiding in the betterment of the rice industry and help achieve rice self-sufficient Philippines.

Results:

- Riceponsible campaign alongside the Knowledge Sharing and Learning (KSL) Activities were conducted in the provinces of Cotabato, Maguindanao, South Cotabato, Davao Del Sur and Zamboanga Del Sur. A total of nine hundred ninety-one (991) participants of the KSL participated in the campaign. Participants were from the local government unit agriculture technicians, personnel from the National Irrigation Administration, board of trustee of the Irrigators' Association, students, faculty and staff of the academe, input dealers, rice miller and traders, seed growers and farmers.

- Fifty students from the University of Southern Mindanao, Upi Agricultural School and Cotabato Polytechnic College had done their On the Job Training Program and one of activity offered to them is on how to be a Riceponsible individual through the campaign. And through the Rice Boot Camp batch 3 and 4, a total of 54 new agriculture graduates were reach by the campaign.

- A total of 10 Be Riceponsible and Career Opportunity in Agriculture Campaign conducted to 10 schools were reached through the conduct of the campaign. The participants were the grade 10 students of the respective schools since this grade level is crucial for the student for they will choose their specialization. With this campaign activity, students may spark its interest in pursuing agriculture or its related field as a career in the future. A total of the 2,212 students committed to be a riceponsible (Table 4).

Table 4. Number of participants reached in the different School of North Cotabato.

School	No. of Male	No. of Female	Total
Pigcawayan NHS	173	216	389
Libungan NHS	86	92	178
Dilangalen NHS	145	187	332
Kabacan NHS	127	104	231
Aleosan NHS	50	51	101
Matalam NHS	57	96	153
M'lang NHS	54	76	130
Tulunan NHS	110	109	219
Pikit	24	37	61
Central Bulanan Elem. School Students during feeding program			418
Total	826	968	2,212

B. Externally Funded Projects

I. Philippine Rice Information System (PRiSM)

PLPSabes, MDLastimoso, and MPATejada

The Philippine Rice Information System (PRISM) project is a collaboration of the Philippine Rice Research Institute (PhilRice), Department of Agriculture (DA), International Rice Research Institute (IRRI), Sarmap, and other partners. The project aims to develop a rice information system in the Philippines using data from remote sensing, crop modeling and field crop surveys. The project has two components: 1. (A) rice mapping (generation of rice map) and yield estimation (crop modeling); 2. (B) A crop surveys (crop health and production situation assessment).

The project also uses tools to enhance the capability of a system specifically the uses advance technology such as remote sensing and crop modeling; smartphones with installed digital recording forms and applications. The project also harnesses the capability of the Regional partners thru trainings, and enhancement of new technologies. Personnel from DA-Regional Field Office (RFOs') and local government unit lead on rice monitoring, pest injuries and crop health assessment. PhilRice-Midsayap facilitated the implementation of project activities such as, rice and non-rice (RnR), crop validation, farmer surveys, and crop health assessment (outside monitoring field) in Region 9, 12, and ARMM with the following objectives: (1) estimate actual rice area, rice yields, yield gaps; (2) detect and map rice growing areas affected by flooding and drought, pests and diseases; and (3) characterize the risk of disease epidemics and pests outbreaks in the Philippines.

Results:

- A total of 120 monitoring fields (MFs) for the 1st semester (S1) and 160 MFs for the 2nd semester (S2) of 2016 were monitored for Regions 09, 12 and ARMM (Table 5). Meanwhile, a ground truthing activity reveals that, Region 12 has the highest validated points with a total of 124 points; 94 points was the rice area, 18 points for corn, 4 points was grassland, and 8 points for the other crops. However, ARMM has 120 ground points while, Region 9 got only 103 validated points (Figure 9).

- On the other hand, six new locations sites were added for second semester implementation. Three sites from ARMM namely: Municipality of Ampatuan, Datu Paglas and North Upi; two from Region 12 (Mlang and Tulunan), and one (1) from Region 9 (Titay).

- In 2016 1st semester, 41% of the farmer cooperators from the Region 9 used certified seed as planting materials, and NSIC Rc222 was the common varieties planted. While, Region 12 and ARMM use good seeds, barter from neighboring farmers. However, Region 12 had the highest NPK fertilizer rate with 60%N – 41%P2O5 – 57%K2O.

Table 5. Regional locations and monitoring fields monitored during the 1st and 2nd semester of 2016 implementation.

Region	Location	No. of Monitoring Field (2016S1)	No. of Monitoring Field (2016S2)
ARMM	Datu Abdullah Sanki	20	
	Datu Odin Sinsuat	20	
	Ampatuan		20
	Datu Paglas		20
	Upi		20
Region 09	Mahayag	20	20
	Molave	20	20
	Titay		20
Region 12	M'lang	20	20
	Tulunan	20	20

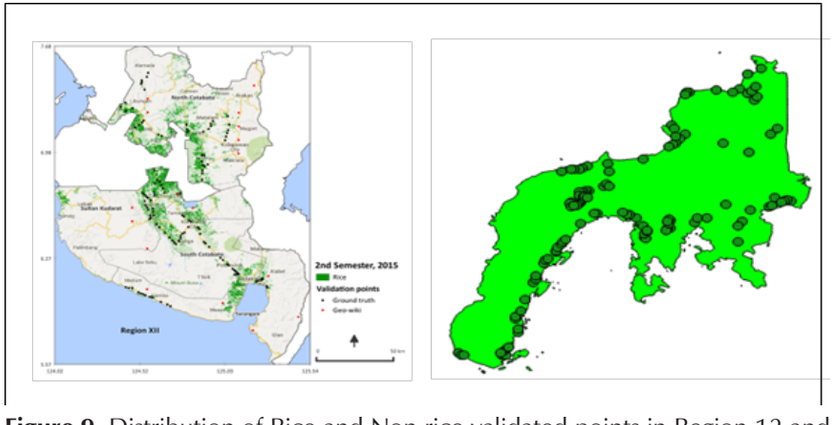


Figure 9. Distribution of Rice and Non rice validated points in Region 12 and ARMM.

- Due to El Niño phenomenon and Mindanao is one of the severely affected areas (Figure 10). Joint survey/assessment was conducted. A total of 127 rice areas were assessed and validated. 74 from the province of Maguindanao, 38 from Zamboanga Peninsula and 60 in the province of North Cotabato.

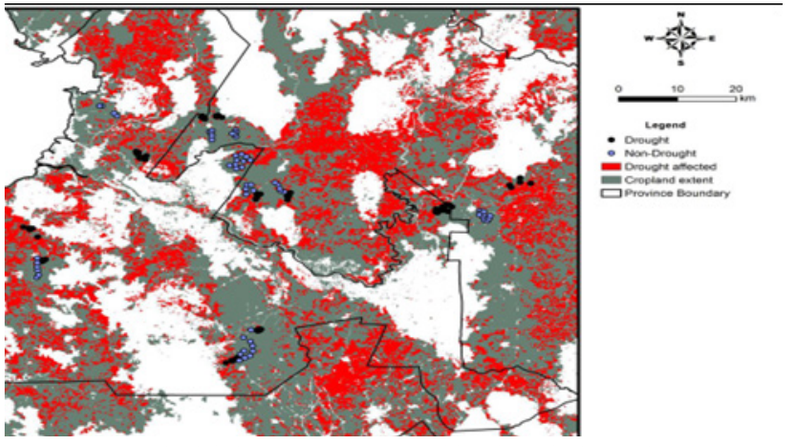


Figure 10. Provincial rice areas as affected by drought in Region 9, 12 and ARMM.

- A total of 64 data collectors and implementers from the different regions were updated, trained and equipped on the new protocols and ODK forms during the National Retooling for component A&B (Fig.11). Furthermore, 35 participants from ARMM, 28 participants from Region 9 and 20 participants from Region 12 were attended the Regional Retooling and Project Assessment conducted in their respective regions.

Figure 11. National retooling on PRiSM for Component A and B project implementers.

II. Project IPaD: Knowledge Sharing and Learning Activity

OHAbdulkadil, MMMedura, and EPAngeles

Increasing agricultural productivity and food sufficiency is a must in developing countries like the Philippines. The gap between extension workers and farmers are one of the factors that affects agricultural productivity since it hinder the dissemination of the latest technologies. In order to answer this scenario and to make things possible involvement of other sector such as those from microfinance institution, rice traders and millers, seed growers, TLE teachers, input provider and local media outlet are empowered in extension to become intermediaries.

Thus Knowledge Sharing and Learning Activity (KSL) gather potential extension intermediaries and rally them to do more to help the farmers. This offers a series of interactive activities that will give participants a broader perspective of the current and future challenges in agriculture and why they need to help our farmers to be competitive, sustainable and resilient. KSL offers Rice Teknoklinik and Technical briefing activities.

Results:

- A total of nine hundred one (991) individuals participated in a twelve KSL activity from January to November that was conducted by PhilRice Midsayap Branch in its area of responsibilities. In North Cotabato five KSL activities were conducted which were held inKabacan (2), Midsayap (2) and M'lang(1). Other provinces conducted with the KSL activity were Maguindanao (1), Zamboanga Del Sur (1), Sultan Kudarat (2), South Cotabato (2) and Davao Del Sur (1).

- The target participants of the activity were the faculty of the academe, seed growers, rice millers and traders, agriculture technician, national irrigation administration personnels, irrigator's association board of directors, personnel from microfinance, technical livelihood teachers, local farmer technicians, farmer's association officials and agriculture students. These individuals are primarily in touched with the farmers and some are farmers themselves and it would be easier for them to disseminate information and resources.

- Majority of the participants were female with a total of 536 individuals (54%) of the participants while male participants comprised 46 % or a total of 455 individuals.

- It was observed also that majority of the participants were in the age range 50 to 59 years old (Figure 12). According to

the IPad video "Mga HamonsaAgrikultura" the average age of farmer is 58 years old which belongs to this age bracket.

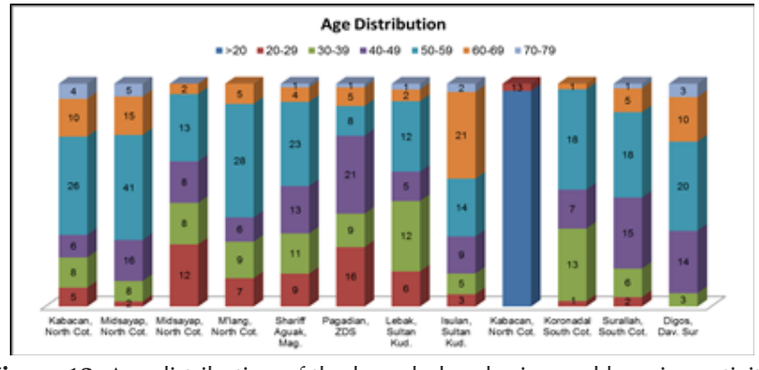


Figure 12. Age distribution of the knowledge sharing and learning activity participants.

Table 6. List of participants of the knowledge sharing and learning.

Date	Venue	Participants	No. of Participants
March 10, 2016	Kabacan, North Cotabato	Faculty, Seed Growers, Traders	59
April 05, 2016	Midsayap, North Cotabato	NIA-LibRIS and I.A BOD	87
April 26, 2016	Midsayap. North Cotabato	Agriculture Technician and MAO's	43
April 27, 2016	M'lang, North Cotabato	Agriculture Technician and MAO's	55
May 24, 2016	ShariffAguak, Maguindanao	NIA- Kabulnan, Local Farmer Technician, and IA BOD	61
June 24, 2016	Pagadian City, Zamboanga Del Sur	Microfinance, AT's, IA BOD, Seed Growers	50
July 26, 2016	Lebak, Sultan Kudarat	TLE Teacher, LFT, AT and IA BOD	38
July 28, 2016	Isulan, Sultan Kudarat	Seed Growers, AT's, Private company technicians, IA BOD	54
September 16, 2016	Kabacan, North Cotabato	Agriculture Students	407
November 07, 2016	Koronadal, South Cotabato	IA BOD, FA Officials and AT	40
November 8, 2016	Surallah, South Cotabato	IA BOD, Seed Grower, TLE teachers	47
November 18, 2016	Digos City, Davao Del Sur	IA BOD, AT's	50

III. Raising Productivity and Enriching the Legacy of Heirloom/Traditional Rice through Empowering Communities in Unfavorable Rice-Based Ecosystem

OHAbdulkadil, SEAbdula, EDMaraganas, and RBMiranda

The country's rice sufficiency by 2013 has become the primal policy for food security and alleviating the hunger incidence. The allocation of irrigation systems is covering fifty one (51) percent of the irrigable areas in the country, the establishment of grains terminals and post-harvest facilities to reduce post-harvest losses and market intermediaries are among the major thrusts of the Department of Agriculture to achieve rice self-sufficiency. But these infrastructure projects require a period of gestation to fruition. Thus, the Department of Agriculture shall undertake an upland rice development program that will establish a community-based seeds system for traditional upland rice varieties and promote a "farming systems approach" anchored on sustainable agricultural practices.

Generally, it aims to (1) increase yields in the upland rice areas by 0.5 t/ha. and production of other crops; (2) sustain models of Community-based Seed Banks (CSB) strategically established and a viable seed production system that help to ensure the availability of Upland rice seeds; (3) capacitate the LGUs, Upland farmers and other stakeholders in the implementation of URDP; (4) institutionalized collaboration and sustained partnership among NGAs, LGUs, NGOs, SCUs and the private sectors in the planning and implementation of development program and interventions and (5) to create and manage a data-based system in upland rice production.

Results:

- There were four (4) established Participatory Heirloom Rice Characterization Plot (PHRCP) in region 12 covering 2 provinces, 2 municipalities and 4 barangays. Each site had different traditional upland rice planted.

- A total of one hundred sixty (160) participants regularly attended FFS meeting on four (4) established sites covering two provinces, 2 municipalities & 4 barangays and majority of the participants are female as shown in table 7.

Table 7. Heirloom FFS in North Cotabato & Sultan Kudarat provinces.

Province/Municipality	Barangay	Number of Participants		Total
		Male	Female	
Sultan Kudarat/Sen. Ninoy Aquino	Sewod	13	40	53
	Malegdeg	14	21	35
North Cotabato/Alamada	Dado	25	17	42
North Cotabato/Banisilan	Malinao	7	23	30
	Total	**59**	**101**	**160**

- A total of two hundred eighty nine (289) individuals who attended in the conducted 4 farmers field day & forum in all established sites in Sultan Kudarat & South Cotabato provinces. The said event was attended by FFS participants, upland farmers from neighboring barangays, invited visitors and partners/implementing agencies (Table 8).

Table 8. Number of attendees during Farmers' Field Day & Forum.

Site	Date of Field Day	No. of Attendees
Sewod, SNA, SK	August 18, 2016	67
Malegdeg, SNA, SK	August 19, 2016	76
Malinao, Banisilan, Cotabato	August 24, 2016	90
Dado, Alamada, Cotabato	September 7, 2016	56
	Total	**289**

IV. Profiling and Seed Purification/Multiplication of Selected Traditional Rice Varieties in Support of DA's Initiative for Exporting Quality Rice in Maguindanao and Sultan Kudarat Provinces

OHAbdulkadil, ABMama, and RBMiranda

Rice (Oryza sativa L.) is an extremely important crop because it serves as the main source of energy for a large segment of the world's population.In the Philippines, rice is also the staple food where it represents 35.6% of our daily food intake (FNRI, 2010). Rice is mostly cultivated in irrigated lowland areas. However, there are few arable lands in the upland areas and they are mostly planted with local traditional rice varieties. These include pigmented rices, aromatic, and long grain white rice. They are recognized for their premium rice grains with excellent eating quality. Most of the traditional rice varieties command higher prices compared to regular milled rice because of their unique and special traits.

The need to conserve and preserve traditional and indigenous rice cultivars is of paramount importance in genetic resources conservation and management. With the advent of traditional varieties as platform component in the Upland Rice Development Program (URDP) of the Department of Agriculture, establishing the genetic identity of these varieties using morphological and molecular methods is a significant aspect for the preservation of these rice germplasm and for establishing origin and proprietary ownership of the cultivar. Furthermore, selected high quality traditional rice varieties are being pursued for the export market by the Department of Agriculture in order to help increase profitability of rice farmers in the uplands. This endeavor necessitates the development and packaging of information associated with the variety including DNA fingerprints for plant variety protection as well as information on grain quality parameters such as aroma.

Activities:

The upland rice collection focused in some selected upland areas of municipalities in Maguindanao and Sultan Kudarat. Preferred upland tradvars were identified and collected. Farmers were also taught on seed purification and seed multiplication.

Results:

- Ten upland rice varieties were identified in Upi, Maguindanao namely: Inumay, Papakan(Malagkit), Manisi, Malay 2, Malagkit (Puti), Kanuni, Parang Parang, Azucena, Tramis and Kutibus. Kasagpi, Hinumay, Dinorado, Malido and Azucena in Senator

Ninoy Aquino, Sultan Kudarat (Table 9).

- Empowered upland rice seed producers namely: Ms. Rhodora Pedroso, Mr. Cefelino Lebuna and Mr. Rogie Arzagon in SNA; Mr. Saidon Sakilan, Ms. Maria Ulangkaya, Mr. Kadaphy Ulilisen and Mr. Alex Ebrahim in Maguindanao area in seed purification and seed banking through hands on activity like rouguing and some other relevant activities in seed production system.

- Assisted and trained upland farmers organization in Upi, Maguindanao on February 2016 on upland rice production with 42 farmers conducted by DAF-ARMM Research Outreach Station (ROS).

Table 9. Profile Data of Identified Seed Growers.

NAME OF FARMERS/ FARM LOCATION	PLANTED/ AREA PLANTED TRADVARS	Date seeded	Date Harvested	Expected Volume of Harvest	HARVESTED	REMARKS
Saidon Sakilan / Upi, Maguindanao	hInumaY & Inabaka/1.7ha	April 24, 2016	September 2016	2,000kg In all Variety	2,452kg	Good Mgt.
Rhodora Pedroso /Kadi, SNA, SK.	Azusena/1ha	April 9, 2016	August 2016	4,000kg in all	1,176kg	Excessive Heat and Rat infestation
Ceferino Lebuna /Kadi, SNA, SK.	Malido/3ha	April 8, 2016	August 2016	8,000kg	2,400kg	Excessive Heat and Rat infestation
Rogie Arzagon /Kadi, SNA, SK.	Azusena and Dinorado/1.5ha	April 26, 2016	August 2016	4,000kg in all variety	1,200kg	Excessive Heat and Rat infesta tion
Alex Ibrahim / DOS, Maguindanao	none				none	Low germ inability of the seeds
Maria Ulangkaya/ DOS, Maguindanao	Bulaw and Hinumay/1ha	April 24, 2016	August 2016	2,000kg	1,015kg	Poor MGT. and Excessive Heat
Kadaphy Ulilisen / Datu Hoffer, Mag.	Kasagpi and Hinnumay/1ha	April 16, 2016	August 2016	2,000kg	2,240kg	Good MGT.

V. Accelerating the Development and Dissemination of Associated Technologies on Rice Production that are Resource Use Efficient

Component 1.1: Accelerating the dissemination of associated technologies for increasing yield and profitability in irrigated (NIS, CIS, SWIP) environment

OHAbdulkadil, EBSibayan, and RS Salazar

This project is in support to the Philippine Food Staple Sufficiency Program of the Department of Agriculture (DA) which include prioritizing investment that can increase and sustain production growth especially interventions that have long term effects on rice production.

The magnitude of and variation in yield gaps associated with production constraints in rice need to be addressed through continuous research, development and promotion of appropriate technologies. Increase in yields through adoption of best crop management practices, reduced labor inputs (direct seeding, mechanization, tillage) and to ensure that market returns are optimized are important factors to address the problem. Thus, this project is being conducted to increase production and reduce inputs through the development, dissemination and adoption of appropriate crop management technologies in regions IX, XI, XII and Autonomous Region in Muslim Mindanao (ARMM) irrigated environment.

Results:

- In 2016 DS, all techno demo farms (TDFs) obtained mean yield of 5.9t/ha (actual yield) compared to 5.4 t/ha (baseline yield), thus, yield increment of 8.5% was observed. However, due to El Niño phenomenon, TDFs at the downstream of Silvestre Pumicpic and Enrique Maestrado were affected by drought during early vegetative stage. The water delivery frequency (Table 10) decreased from an average of 12 times to 9 times after technology intervention or a 25% reduction in water delivery.

- NSIC Rc158, Rc226, Rc238, Rc222 and Rc302 (registered seeds) seeds were the most preferred by planted by FCs . These varieties were first to be used by Farmer Cooperators in their respective areas.

- In 2016 WS, all sites (excluding MaBuTad, Batayan United Farmers and Don Federico IA) obtained mean yield of 5.9t/ha (actual yield) compared to 5.3t/ha (baseline yield) (Table 11). Yield increment of 10.2% in WS was observed.

- The water delivery frequency (Table 12) decreases from an average of 13 times to 6 times after technology intervention or 46% reduction. Compared to DS, WS has lesser water delivery frequency due to numerous rainfalls.

Table 11. Frequency of water delivery and yield. 2016 DS implementation.

IA	Water Delivery Frequency		Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment (t/ha)
	Before Intervention	After Intervention			
Green Grass					
Doroteo Suico	14	9	3.7	5.1	1.4
Silvestre Pumicpic	11	-	3.9	-	-
Starbright					
Celso Simborio	12	9	6.0	5.8	-0.2
Alter Laput	12	9	7.0	6.5	-0.5
Evergreen Malamboon					
Antonio Gella	12	8	7.2	7.0	-0.2
Renato Tenamisan	12	8	5.2	6.0	0.8
Rufino Sayago	12	8	5.2	5.0	-0.2
NOKIA					
Jose Cabanes	12	7	3.9	4.6	0.7
Enrique Maestrado	10	-	5.6	-	-
Seres					
John Clinton Samson	12	10	3.4	4.0	0.6
MaBuTad					
Joselito Apolinario	14	10	5.7	5.9	0.2
Lorenzo Natividad, Jr.	12	7	6.3	8.4	2.1
Ian Agustin	14	11	6.0	6.2	0.2
Average	**12**	**9**	**5.4**	**5.9**	**0.5**

Table 12. Frequency of water delivery and yield. 2016 WS implementation.

IA/ Cooperators	Water Delivery Frequency		Baseline Yield (t/ha)	Actual Yield (t/ha)	Yield Increment (t/ha)
	Before Intervention	After Intervention			
Matagabong					
Leonardo Dalayap	14	6	5.3	6.7	1.4
Raul Ambong	14	5	5.5	8.2	2.7
Bag-ong Paglaum					
Erwin De Ocampo	12	6	5.9	8.4	2.5
Gary Dolor	12	5	5.6	6.2	0.6
Nelson Colmo	12	6	5.8	7.9	2.1
Manisan					
Ebrahim yusop	14	-	5.0	-	-
Abdullah Kadatuan Aliblo	14	-	4.5	-	-
Norodin Abid	14	-	4.3	-	-
Al-Shariff					
Tong Gudal	14	-	4.8	-	-
Riyadh Masukat	14	-	4.0	-	-
Edris M. Kamlon	14	-	4.1	-	-
Dikalongan					
Zaed Ismael	12	4	4.5	3.6	-0.9
Rem-rem Marañon	12	5	4.6	4.1	-0.5
Blah Kadil	12	5	5.2	7.5	2.3
Guindulongan					
Phoren Sumadsad	14	7	4.5	5.0	0.5
Kusi Baldek	14	6	4.4	4.4	0
Butuan Nol	12	7	5.7	7.8	2.1

Table 12. Frequency of water delivery and yield. 2016 WS implementation. (con't)

Kapamagayon					
Kagui Abdullah Asim	14	6	5.2	6.3	1.1
Jehad Kandado	14	6	4.8	5.4	0.6
Adan Kaling	12	4	4.7	4.5	-0.2
ChrisLam/Div. 5					
Nelito Soria	12	5	5.1	3.6	-1.5
Danny Sebua	12	7	6.0	6.7	0.7
Rainerio Cabañog	12	5	5.1	5.3	0.2
C-Glad					
Ecclesiastes Matunog	12	6	5.0	4.0	-1.0
2-BB					
Reynaldo Navasca	11	6	7.1	7.3	0.2
MaBuTad					
Lorenzo Natividad, Jr.	-	-	-	-	-
Batayan United Farmers					
Emeterio Pariolan	-	-	-	-	-
Virgilio Dalogdog	-	-	-	-	-
Don Federico					
Isabelo Paculanang	-	-	-	-	-
Manuel Espanola	-	-	-	-	-
Andres Caduhada, Jr.	-	-	-	-	-
Average	**13**	**6**	**5.3**	**5.9**	**0.6**

- Conducted 4 batches of appreciation seminar for Irrigator's Irrigation of North Cotabato and Maguindanao and trained 169 Irrigator's Association farmer members on Palay Check System and Palayamanan Plus with emphasis on water management. Two batches of training were conducted for NIA-Libungan RIS (79 pax); 1 batch for NIA-Kabacan RIS (45 pax); and 1 batch for Shariff Aguak, Maguindanao (45 pax).

- The training course focused on to help increase farmers' productivity and income of North Cotabato and Maguindanao rice farming community.

VI. Agricultural Support Component: National Irrigation Sector Rehabilitation & Improvement Project

OHAbdulkadil, SEAbdula, RPJayme, PMOstique, CMNCasco, SCLastimosa, WPBugtay, LDRAbaoag, and AMCorales

National Irrigation Sector Rehabilitation and Improvement Project (NISRIP) is a project under the loan agreement between the Government of the Philippines and the Japan International Cooperation Agency (JICA). The project aims to contribute to the national rice self – sufficiency by strengthening the irrigation sector in the country. This project has two primary components, the hard and soft components.

To ensure the increase in the yield of the farmers benefiting from the improvement and rehabilitation of the irrigation facilities, corresponding capacity enhancement through the conduct of the FFS shall be taken for the 11 NIS covering around 35,670 ha of service area. Three levels of training shall be conducted for the Ias with the establishment of three (3) participatory demonstration farms per IA (45 IAs) cum seed production area and corresponding information and communication support. Basic agricultural machinery to be provided to each of the 45 IAs are seed cleaner, thresher, bag closer, weighing scale, hand tractor with trailer, and moisture meter.

Thus, this project is being implemented in Davao del Sur in Mal River Irrigation System, MalRIS with 5 Irrigators Association as project beneficiaries and Sultan Kudarat in Lambayong River Irrigation System, LamRIS with 12 Irrigators Associations to: (1) provide Rice S and T updates to each of the 11 NIS; (2) conduct one (1) season – long training FFS per IA for two (2) cropping seasons using the PalayCheck System with focus on water management and the use and maintenance of agricultural machinery; (3) develop at least 10 Farmer Technicians (FT) per IA who shall lead the FFS in the subsequent seasons; (4) establish three (3) participatory demonstration farm (PDF) per IA; (5) produce quality seeds from the PDF cum seed production area; to provide one (1) lot of agricultural machinery per IA; (6) train the members of the IA on the use and maintenance of the basic farm tools and machinery (7) increase awareness and enhance the access of Agricultural Extension Workers (AEWs) and farmers to rice information and decision support tools with the use of tri-media; and (8) accelerate the adaptation and integration of new technologies into the irrigation systems.

Results:

- Yield performance of the FFS farmer participants in twelve (12) Irrigator's Associations at Lambayong River Irrigation Sysytem (LamRIS), Lambayong, Sultan Kudarat were monitored (Table

13a &13b).

- Results showed that all farmer participants obtained an average yield increment of 1.35t/ha

- Conducted farmers' field school at PODIMID IA with 34 participants.

- Delivered agricultural farm machineries in Mal RIS, Davao del Sur as part of the project provision to all IA beneficiaries (Table 14).

Table 13a. Yield and Yield Increment in tons per hectare of PDF in Lambayong, Tacurong City and Sultan Kudarat.

IA	Baseline Ave. Yield DS '13 (t/ha)	Computed Ave. Yield DS '16 (t/ha)	Yield Increment 1 t/ha
KAMAKAT	4.26	4.45	0.21
BUCATILL	3.77	3.65	- 0.12
POBLEX	2.91	2.64	- 0.23
PODIMID	3.58	2.70	- 0.88
Total	**3.63**	**3.36**	**- 0.26**

Table 13b. Yield and Yield Increment in tons per hectare of PDF in Lambayong Irrigation System.

IA	Baseline Ave. Yield DS '13 (t/ha)	Computed Ave. Yield DS '16 (t/ha)	Yield Increment 1 t/ha
BUCATILL	4.28	5.58	1.30
KAMAKAT	4.49	5.60	1.11
POBLEX	4.86	5.90	1.04
PODIMID	5.24	6.27	1.03
BAHE	4.33	6.00	1.67
BILTUM	4.80	6.20	1.40
PARADIMA	4.58	5.70	1.12
TUMALI	4.66	6.25	1.59
CONTA	3.50	5.30	1.80
KAPNOLA	5.42	6.50	1.08
KATTAM	4.56	6.10	1.54
NALDAN CREEK	3.92	5.49	1.57
Total Ave.	**4.55**	**5.87**	**1.35**

Table 14. Farm equipment delivered in Davao del Sur.

NAME of IA	Machine	Unit
BURLAN	Rice thresher	1
LOTOFIA	Rice thresher	1
LABAKAFIA	Rice thresher	1

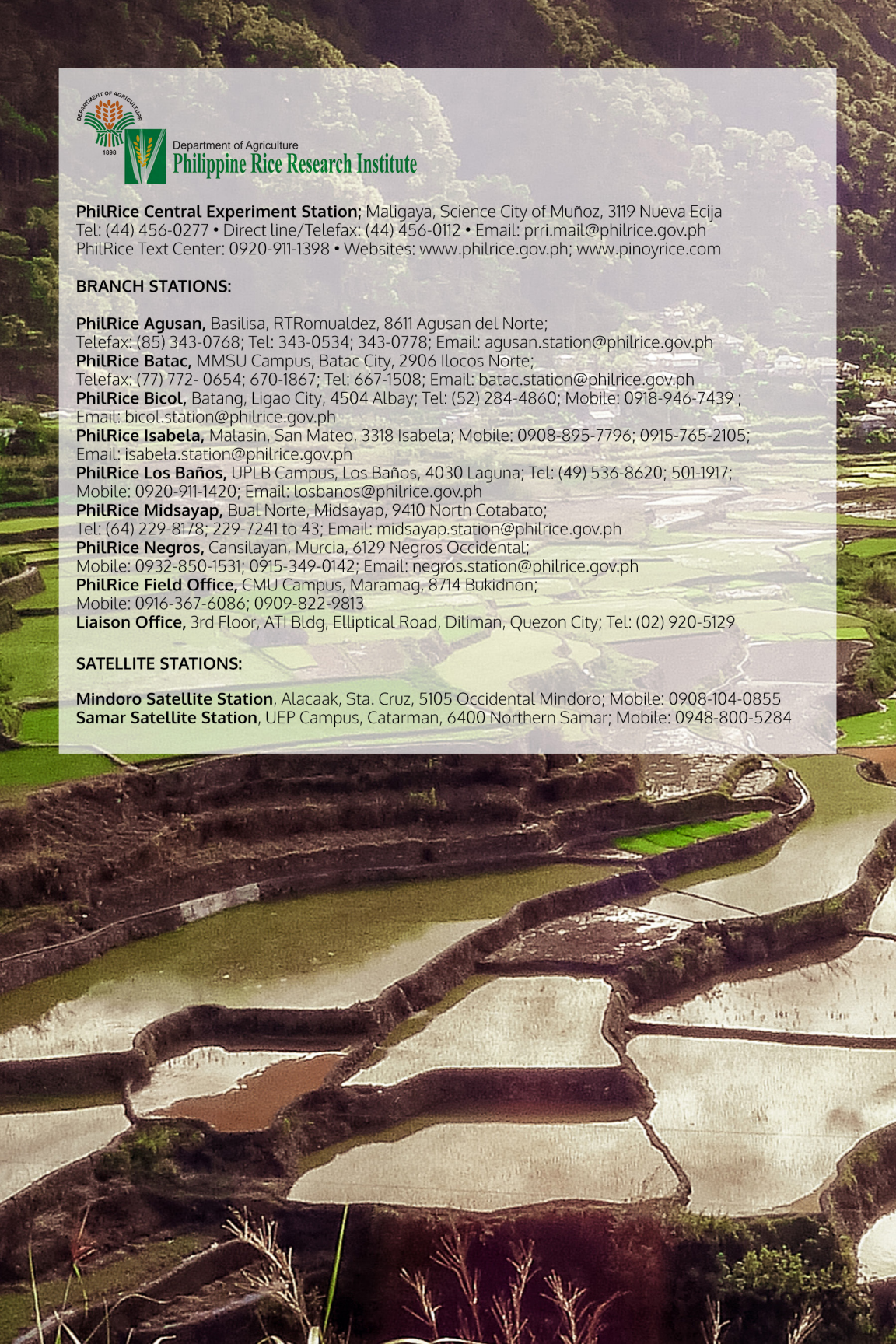
Abbreviations and acronymns

ABA – Abscicic acid
Ac – anther culture
AC – amylose content
AESA – Agro-ecosystems Analysis
AEW – agricultural extension workers
AG – anaerobic germination
AIS – Agricultural Information System
ANOVA – analysis of variance
AON – advance observation nursery
AT – agricultural technologist
AYT – advanced yield trial
BCA – biological control agent
BLB – bacterial leaf blight
BLS – bacterial leaf streak
BPH – brown planthopper
Bo - boron
BR – brown rice
BSWM – Bureau of Soils and Water Management
Ca - Calcium
CARP – Comprehensive Agrarian Reform Program
cav – cavan, usually 50 kg
CBFM – community-based forestry management
CLSU – Central Luzon State University
cm – centimeter
CMS – cystoplasmic male sterile
CP – protein content
CRH – carbonized rice hull
CTRHC – continuous-type rice hull carbonizer
CT – conventional tillage
Cu – copper
DA – Department of Agriculture
DA-RFU – Department of Agriculture-Regional Field Units
DAE – days after emergence
DAS – days after seeding
DAT – days after transplanting
DBMS – database management system
DDTK – disease diagnostic tool kit
DENR – Department of Environment and Natural Resources
DH L– double haploid lines
DRR – drought recovery rate
DS – dry season
DSA - diversity and stress adaptation
DSR – direct seeded rice
DUST – distinctness, uniformity and stability trial
DWSR – direct wet-seeded rice
EGS – early generation screening
EH – early heading
EMBI – effective microorganism-based inoculant
EPI – early panicle initiation
ET – early tillering
FAO – Food and Agriculture Organization
Fe – Iron
FFA – free fatty acid
FFP – farmer's fertilizer practice
FFS – farmers' field school
FGD – focus group discussion
FI – farmer innovator
FSSP – Food Staples Self-sufficiency Plan
g – gram
GAS – golden apple snail
GC – gel consistency
GIS – geographic information system
GHG – greenhouse gas
GLH – green leafhopper
GPS – global positioning system
GQ – grain quality
GUI – graphical user interface
GWS – genomwide selection
GYT – general yield trial
h – hour
ha – hectare
HIP - high inorganic phosphate
HPL – hybrid parental line
I - intermediate
ICIS – International Crop Information System
ICT – information and communication technology
IMO – indigenous microorganism
IF – inorganic fertilizer
INGER - International Network for Genetic Evaluation of Rice
IP – insect pest
IPDTK – insect pest diagnostic tool kit
IPM – Integrated Pest Management
IRRI – International Rice Research Institute
IVC – in vitro culture
IVM – in vitro mutagenesis
IWM – integrated weed management
JICA – Japan International Cooperation Agency
K – potassium
kg – kilogram
KP – knowledge product
KSL – knowledge sharing and learning
LCC – leaf color chart
LDIS – low-cost drip irrigation system
LeD – leaf drying
LeR – leaf rolling
lpa – low phytic acid
LGU – local government unit
LSTD – location specific technology development
m – meter
MAS – marker-assisted selection
MAT – Multi-Adaption Trial
MC – moisture content
MDDST – modified dry direct seeding technique
MET – multi-environment trial
MFE – male fertile environment
MLM – mixed-effects linear model
Mg – magnesium
Mn – Manganese
MDDST – Modified Dry Direct Seeding Technique
MOET – minus one element technique
MR – moderately resistant
MRT – Mobile Rice TeknoKlinik
MSE – male-sterile environment
MT – minimum tillage
$mtha^{-1}$ - metric ton per hectare
MYT – multi-location yield trials
N – nitrogen
NAFC – National Agricultural and Fishery Council
NBS – narrow brown spot
NCT – National Cooperative Testing
NFA – National Food Authority
NGO – non-government organization
NE – natural enemies
NIL – near isogenic line
NM – Nutrient Manager
NOPT – Nutrient Omission Plot Technique
NR – new reagent
NSIC – National Seed Industry Council
NSQCS – National Seed Quality Control Services
OF – organic fertilizer
OFT – on-farm trial
OM – organic matter
ON – observational nursery
OPAg – Office of Provincial Agriculturist
OpAPA – Open Academy for Philippine Agriculture
P – phosphorus
PA – phytic acid
PCR – Polymerase chain reaction
PDW – plant dry weight
PF – participating farmer
PFS – PalayCheck field school
PhilRice – Philippine Rice Research Institute
PhilSCAT – Philippine-Sino Center for Agricultural Technology
PHilMech – Philippine Center for Postharvest Development and Mechanization
PCA – principal component analysis
PI – panicle initiation
PN – pedigree nursery
PRKB – Pinoy Rice Knowledge Bank
PTD – participatory technology development
PYT – preliminary yield trial
QTL – quantitative trait loci
R - resistant
RBB – rice black bug
RCBD – randomized complete block design
RDI – regulated deficit irrigation
RF – rainfed
RP – resource person
RPM – revolution per minute
RQCS – Rice Quality Classification Software
RS4D – Rice Science for Development
RSO – rice sufficiency officer
RFL – Rainfed lowland
RTV – rice tungro virus
RTWG – Rice Technical Working Group
S – sulfur
SACLOB – Sealed Storage Enclosure for Rice Seeds
SALT – Sloping Agricultural Land Technology
SB – sheath blight
SFR – small farm reservoir
SME – small-medium enterprise
SMS – short message service
SN – source nursery
SSNM – site-specific nutrient management
SSR – simple sequence repeat
STK – soil test kit
STR – sequence tandem repeat
SV – seedling vigor
t – ton
TCN – testcross nursery
TCP – technical cooperation project
TGMS – thermo-sensitive genetic male sterile
TN – testcross nursery
TOT – training of trainers
TPR – transplanted rice
TRV – traditional variety
TSS – total soluble solid
UEM – ultra-early maturing
UPLB – University of the Philippines Los Baños
VSU – Visayas State University
WBPH – white-backed planthopper
WEPP – water erosion prediction project
WHC – water holding capacity
WHO – World Health Organization
WS – wet season
WT – weed tolerance
YA – yield advantage
Zn – zinc
ZT – zero tillage

List of Tables

List of Figures

List of Figures



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